



28. (Previously Presented) The biosensor circuit arrangement as claimed in claim 27, wherein the calibration device is set up such that it is used to control the electrical potential applied to the first or a second source/drain terminal of the measuring transistor in such a way that it can set a sensor signal of the sensor element, said sensor signal being brought about by a sensor event, to a value which is independent of the value of the physical parameter of the sensor element.
29. (Previously Presented) The biosensor circuit arrangement as claimed in claim 28, wherein the calibration device is set up such that it is used to control the electrical potential present at the first source/drain terminal of the measuring transistor.
30. (Currently Amended) The biosensor circuit arrangement as claimed in claim 29, wherein a first electrical reference potential is applied to the second source/drain terminal of the measuring transistor, and in which the calibration device has a calibration transistor having a first and a second source/drain terminal, which are connected between the first source/drain terminal of the measuring transistor and the device for detecting an electrical parameter, and ~~it is possible to apply~~ to the gate terminal thereof an electrical signal is applied such that the electrical potential which is applied to the first source/drain terminal of the measuring transistor is set such that the alteration of the value of the physical parameter of the sensor element can at least partly be compensated for.
31. (Previously Presented) The biosensor circuit arrangement as claimed in claim 29, wherein the calibration device is set up



compensating for the alteration of the value of the physical parameter, the electrical potential at the gate terminal of the calibration transistor such that, in the absence of a sensor event, the current flows between the two source/drain terminals of the measuring transistor and of the calibration transistor are identical.

34. (Previously Presented) The biosensor circuit arrangement as claimed in claim 31, wherein a third electrical reference potential is applied to the first source/drain terminal of the measuring transistor, and wherein the calibration device comprises:

a calibration transistor having a first and a second source/drain terminal;

a second constant-current source, which is coupled to the respective second source/drain terminals of the measuring and calibration transistors that are connected in parallel with one another, for the provision of a predeterminable electrical current intensity; and

a third constant-current source, which is coupled to the first source/drain terminal of the calibration transistor, for the provision of a further predeterminable electrical current intensity, the third constant-current source being connected such that it is used to set, for at least partly compensating for the alteration of the value of the physical parameter, the potentials that are applied to the terminals of the transistors such that, in the absence of a sensor event, the current flows between the two source/drain terminals of the measuring transistor and of the calibration transistor are identical.



is provided to the input of the electrical subtraction device;  
and

a sensor signal independent of the value of the physical parameter of the sensor element is provided at the output of the electrical subtraction device, as a result of which the alteration of the value of the physical parameter is at least partly compensated for.

37. (Previously Presented) The biosensor circuit arrangement as claimed in claim 27, wherein the electrical parameter is an electrical voltage or an electric current.
38. (Previously Presented) The biosensor circuit arrangement as claimed in claim 26, wherein the sensor electrode has one or a combination of materials selected from the group consisting of titanium, titanium nitride, gold, and platinum.
39. (Previously Presented) The biosensor circuit arrangement as claimed in claim 26, further comprising an amplifier element for amplifying a sensor signal.
40. (Currently Amended): The biosensor circuit arrangement as claimed in claim 36, further comprising a switching device set up such that it is used optionally to couple the sensor element to a fifth electrical reference potential or to decouple it from the latter, in order to protect the sensor element from damage ~~and/or in order to apply a defined electrical potential to the sensor element.~~

41. (Previously Presented) The biosensor circuit arrangement as claimed in claim 26, wherein the substrate is a silicon substrate.
42. (Previously Presented) The biosensor circuit arrangement as claimed in claim 26, wherein a type of coupling between the sensor element and a liquid to be examined has a capacitive component.
43. (Previously Presented) A sensor array having a plurality of biosensor circuit arrangements as claimed in claim 26, wherein said biosensor circuit arrangements are arranged essentially in matrix form in crossover regions of row and column lines and being connected up to the row and column lines.
44. (Currently Amended) The sensor array as claimed in claim 43, wherein at least a portion of the biosensor circuit arrangements have a selection element – coupled to the respectively associated row line and column line – for selection of the respective sensor arrangement to detect a sensor signal of the sensor element of the selected biosensor circuit arrangement and ~~and/or~~, in the case of the selected biosensor circuit arrangement, at least partly to compensate for the alteration of the value of the physical parameter. ~~and/or to apply a fifth electrical potential to the sensor element of the selected biosensor circuit arrangement.~~
45. (Canceled)
46. (Canceled)

47. (Previously Presented) The sensor array as claimed in claim 43, wherein at least a portion of the column lines are coupled to a potential control device, which is set up such that it holds the electrical potential of the associated column line at an essentially constant value.
48. (Previously Presented) A biosensor array having a sensor array as claimed in claim 43.
49. (New) The biosensor circuit arrangement as claimed in claim 36, further comprising a switching device set up such that it is used optionally to couple the sensor element to a fifth electrical reference potential or to decouple it from the latter, in order to apply a defined electrical potential to the sensor element.
50. (New) The biosensor circuit arrangement as claimed in claim 36, further comprising a switching device set up such that it is used optionally to couple the sensor element to a fifth electrical reference potential or to decouple it from the latter, in order to protect the sensor element from damage and in order to apply a defined electrical potential to the sensor element.
51. (New) The sensor array as claimed in claim 43, wherein at least a portion of the biosensor circuit arrangements have a selection element - coupled to the respectively associated row line and column line - for selection of the respective sensor arrangement to detect a sensor signal of the sensor element of the selected biosensor circuit arrangement and, in the case of the selected biosensor circuit arrangement, to apply a fifth



electrical potential to the sensor element of the selected biosensor circuit arrangement.

52. (New) The sensor array as claimed in claim 43, wherein at least a portion of the biosensor circuit arrangements have a selection element - coupled to the respectively associated row line and column line - for selection of the respective sensor arrangement to detect a sensor signal of the sensor element of the selected biosensor circuit arrangement and, in the case of the selected biosensor circuit arrangement, at least partly to compensate for the alteration of the value of the physical parameter and to apply a fifth electrical potential to the sensor element of the selected biosensor circuit arrangement.
53. (New) The sensor array as claimed in claim 43, wherein at least a portion of the biosensor circuit arrangements have a selection element - coupled to the respectively associated row line and column line - for selection of the respective sensor arrangement to detect a sensor signal of the sensor element of the selected biosensor circuit arrangement or, in the case of the selected biosensor circuit arrangement, at least partly to compensate for the alteration of the value of the physical parameter.
54. (New) The sensor array as claimed in claim 43, wherein at least a portion of the biosensor circuit arrangements have a selection element - coupled to the respectively associated row line and column line - for selection of the respective sensor arrangement to detect a sensor signal of the sensor element of the selected biosensor circuit arrangement or, in the case of the





